



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(54) Title: A MODULE FOR BUILDING A TOY STRUCTURE</p> <div data-bbox="349 1144 1291 1806"> </div> <p>(57) Abstract</p> <p>A module for building a structure, having a generally planar body including an upper and lower face with a plurality of sides, each side having side coupling means for coupling to a side coupling means of another module side and the upper and lower faces having face coupling means which is able to be coupled with a side coupling means of a like module.</p>		

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## A MODULE FOR BUILDING A TOY STRUCTURE

The present invention relates to toys and in particular to building elements used for constructing toys.

In a particular form the present invention relates to  
5 constructional elements used for building geometrical shapes.

One example of a constructional toy is shown in US patent 3698124. Each constructional element is triangular in shape and includes slots which allow like triangular  
10 elements to fit together to form a geometrical structure.

Another US patent 5100358 also discloses a triangular shaped element which is generally planar, with each side of the element provided with coupling sections of different geometrical shapes.

15 Another US patent 4886477 discloses a generally triangular shaped element which in addition to having coupling sections on each side also has a specially shaped coupling device located on its upper and lower surfaces to allow like triangular elements to be connected face to face.

20 The present invention is aimed at providing a module which is capable of being used for building toy geometrical structures which enables like elements to be connected together at a number of different angles with respect to each other.

25 According to the present invention there is provided a module for building a structure, having a generally planar body including an upper and lower face with a plurality of sides, each side having side coupling means for coupling to a side coupling means of another module side and the upper  
30 and lower faces having face coupling means which is able to be coupled with a side coupling means of a like module.

It is preferred that the module comprises at least three side faces.

The upper and lower faces preferably each have a  
35 separate face coupling means.

The face coupling means may comprise at least one female portion which is adapted to couple with a male

portion of one side of another module.

The upper and lower faces may have a plurality of female portions adapted to allow a plurality of modules to be coupled therewith.

5        Preferably the number of female portions on the upper and lower faces is the same as the number of sides of the module.

The upper and lower face coupling means may be adapted to connect modules together at right angles to each other.

10       Each female portion may comprise at least one hole through the upper and lower faces.

Each female portion may be located at respective regions near a corner of the module.

Each module is preferably triangular in shape.

15       According to other embodiments of the present invention the module may be square shaped or another geometrical shape, or an irregular shape.

Each side of the module preferably includes a side coupling means with a plurality of coupling portions.

20       It is preferred that the module includes two side coupling portions per side.

Each side coupling portion may include a male or female portion.

25       Each side preferably includes a male side coupling portion and a female side coupling portion.

It is preferred that each male side coupling portion includes a protrusion.

Each protrusion preferably extends at right angles from respective sides of the module.

30       Each protrusion preferably extends in the same plane as the upper and lower faces.

Preferably each male portion includes a protrusion with a recess on either side of the protrusion.

35       Each male portion preferably has the same width as the width of the hole or holes of the upper and lower faces.

Each female portion preferably includes a recess in the side on which it is located.

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Each female portion may be located between two protrusions.

The two protrusions of the female portion may extend beyond the side the same distance as the protrusion of the male portion.

The length of the protrusion of the side male portion may be substantially the same as the depth of the recess of the female portion.

It is preferred that the male and female side coupling portions are located next to respective corners of the module.

The male and female side coupling portions of one module are preferably adapted to couple with the male and female side coupling portions of like modules.

It is preferred that the protrusions of the male and female portions are rectangular in shape, parallel and perpendicular to the plane of the module.

The protrusions of the female coupling portions may be adapted to fit into two holes of the upper and lower face coupling means.

The holes may be arranged so that a like module when coupled to the hole(s) is oriented 50° to a side of the module.

The female coupling portion(s) of upper and lower faces are preferably adapted to couple with female and male side coupling portions.

The side coupling portions of like modules can be coupled at angles ranging from 50 to 180°.

It is preferred that the side coupling portions of like modules when coupled together provide a hinge connection within predetermined limits of movement.

It is preferred that female coupling portions of the upper and lower faces include three holes, two for female side coupling portions and one for male side coupling portions.

The male and female side coupling portions may include retaining means for limiting sideways sliding movement of

one module coupled to another like module.

The module preferably includes retaining means for limiting coupled modules from rotating relatively with respect to each other.

5 According to another embodiment of the present invention a male coupling portion is able to clip into a recess of a female coupling portion.

It is preferred that the retaining means comprises a wall covering one side of recesses on either side of a protrusion of the male portion.

It is preferred that each of the protrusions includes a head portion which is wider than a neck portion of the protrusion.

It is preferred that the head portion comprises arcuate side wall surfaces.

It is preferred that the head section extends into the neck section at a point beyond the level of the outer wall of the side of the module.

According to another embodiment of the present invention the upper and lower coupling portions comprise at least one set of recesses or indents which are shaped and sized to receive protrusions of male and female side coupling portions.

It is preferred that a set of recesses/indents comprises side female coupling portion recesses/indent(s) and male side coupling portion recesses/indent(s).

According to another aspect of the present invention there is provided a module for building a structure, having a generally planar body including an upper and lower face with a plurality of sides, each side having a coupling means including a female portion and a male portion, each female portion having a recess with a narrow opening and each male portion having a protrusion with a neck region, wherein the coupling means of the module is adapted to be coupled with a coupling means of another module by inserting the neck region of the male portion through the narrow opening of the female portion.

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Preferably the neck region is resiliently deformable to fit through the narrow opening.

Preferably the female portion includes protuberances on either side of the recess, which protuberances are  
5 resiliently deformable to allow the neck region to pass through the narrow opening.

Each protuberance preferably has an inner surface with an enlarged portion at its outer end, with the narrow opening being located between the enlarged portions.

10 Alternatively the protuberances slope inwardly towards each other.

Each protrusion may have a head region and the neck region is located on opposite sides therebelow.

Each protrusion may have a depression on each side  
15 thereof, which depression lies below the level of a central region of the side of the module.

The recess preferably has a bottom surface which is below the level of the central region.

The depression may be located below the recess.

20 One module preferably cannot be coupled to another end to end.

The coupling means when coupled preferably enables one module to pivot with respect to the other module with which it is coupled.

25 It is preferred that pivoting with respect to coupled modules is limited to between 45° and 175°.

It is preferred that the each module has a raised edge portion at a corner adjacent female protuberances.

30 Preferably the coupling means is adapted to form a hinge when coupled with a coupling means of another module.

It is preferred that a side of a module has a plurality of different levels of recesses and depressions and central and edge portions to enable the space between opposing coupled surfaces to remain within predetermined ranges.

35 It is preferred that the coupled side surfaces of each module have levels chosen so as to minimise the distance between them when the coupled modules are pivoted together

or apart.

A preferred embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

5       Figure 1 shows an angled view of a module according to a first embodiment of the present invention;

      Figure 2 shows an angled view of three modules shown in Figure 1 when connected together;

10       Figure 3 shows a second embodiment of a module according to the present invention incorporating an anti-twisting arrangement;

      Figure 4 shows a module according to a third embodiment of the present invention;

15       Figure 5 shows a top view of two modules of Figure 1 connected together;

      Figure 6 shows a top angled view of a module according to a fourth embodiment of the present invention;

      Figure 7 shows a bottom angled view of the module shown in Figure 6;

20       Figure 8 shows an angled view of two modules according to the fourth embodiment when partially coupled together;

      Figure 9 shows a top angled view of a module according to a fifth embodiment of the present invention;

25       Figure 10 shows a close up view of two modules according to the fifth embodiment when coupled together;

      Figure 11 shows two modules according to the fifth embodiment when coupled together;

      Figure 12 shows one side view of three modules according to the fifth embodiment when coupled together; and

30       Figure 13 shows a polygonal device constructed from modules according to the fifth embodiment of the present invention.

35       As shown in Figure 1 a module according to the preferred embodiment has the general shape of an equilateral triangle 11. The corners of the triangle are absent to avoid the presence of sharp corners.

      The triangular shaped module 11 is planar and has three



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sides 12, 13, 14 with straight side walls perpendicular to the plane of upper and lower faces 15, 16.

Each side wall 12, 13, 14 has a male section 17 and a female section 18.

5        Each male section 17 consists of a rectangular shaped spigot 19 which extends outwardly beyond the level of the side wall 12 and centrally from a square shaped recess 20 which is thus divided into left and right recesses 21, 22.

10        The female section 18 consists of two rectangular shaped spigots 23, 24 separated by a rectangular recess 25.

      The spigots 23, 24 extend outwardly from the side wall 12 and are level with the spigot 19 of the male section 17.

15        The depth of the recess 25 with respect to the side wall 12 is the same as the depth of each of the recesses 20, 22 with respect to the level of the side wall 12.

      The width of the recesses 20, 22 and 25 may be the same as the width of the spigots 19, 23 and 24. Although according to another embodiment the width of the protrusion 19 is the same as the width of the recess 25 whereas the  
20        width of the protrusions 23, 24 are the same as the widths of the recesses 20 and 22.

      The male section 17 is located near one end of the side wall 12 and the female section is located symmetrically close to the other end of the side wall 12.

25        The other side walls 13 and 14 have the same configuration of male section 17 and female section 18.

      The top face 15 of the module 11 has an arrangement of three sets of holes 30, 31, 32.

30        Each set of holes 30, 31, 32 is located close to the centre 40 of the module and symmetrically about a line drawn from the centre of the module to a respective one of the corners of the module.

35        Each set of holes 30, 31, 32 consists of a single rectangular hole 33 close to the centre 40 of the module followed by two rectangular holes 34, 35 which are located closer to a respective one of the corners of the module 11 and symmetrically on either side of a line drawn between the

centre 40 and a respective one of the corners of the module 11.

The first rectangular hole 33 is bisected by the line from the centre 40 to the respective one of the corners of the module 11.

As shown in Figure 2 two modules 50, 51 can be aligned in the same plane so that the male section 52 of one module 51 couples to the female portion 53 of the other module 50. Likewise the female section of the same side wall 54 of module 51 couples with the male portion of side wall 55 of the other module 50, although this coupling is hidden by third module 60.

With the two modules 50 and 51 connected side wall to side wall the third module 60 can be connected across both modules 50, 51 with the male protrusion of side wall 61, which contacts both modules 50, 51 fitting into hole 56 of module 51 and the protrusion 63, 64 of side wall 61 fitting into holes 57 and 58 of module 50.

To enable the module 60 to connect to a single hole in one set of holes of module 51 and two holes of one set of holes in module 50, the distance between both sets of holes in both modules 50, 51 must be the same as the distance between the protrusions 63, 64 and 56 of module 60, being a module identical to modules 50 and 51. It follows from the above that the alignment of the sets of holes 30, 31, 32 are arranged so that each of the holes 33, 34, 35 within a set 30, 31, 32 are oriented so that their longest sides (in the case of rectangular shaped holes) are in parallel with a line drawn at 60° across the closest corner of the respective set of holes 30, 31, 32.

The correct orientation of the holes 33, 34 and 35 is ensured by orienting them with respect to a line drawn between the centre of the module and a respective corner of the module and having the holes symmetrically aligned with respect to that line.

It is within the scope of the invention however to change the orientation of the holes and change the number of

sets of holes if the desired result is just to have modules which when connected together do not form perfectly symmetrical geometrical shapes.

5 With module 60 connected as shown in Figure 2 the modules 50 and 51 are fixed together and are effectively immovable with respect to each other. However without module 60 attached both modules 50 and 51 are able to be moved with respect to each other while coupled between an angle of approximately 60° and 180°.

10 When a number of modules are connected together, side face to side face the integrity of the overall structure can be unstable. For example it is possible for one module to twist with respect to another so that adjacent modules can become uncoupled. To overcome this problem and to introduce  
15 greater stability to couplings between protrusions and recesses, the recesses 20, 22 on either side of protrusion 19 can be modified according the second embodiment as shown in Figure 3.

20 Thus recess 20 has a cover or wall 70 provided across the space between protrusion 19 and the opposing side wall 12 and on the upper face 15 of the module 80.

Likewise the other recess 22 has a wall 71 extending from the protrusion 19 to the opposing wall 12 on the lower face 16 of the module 80.

25 As shown both walls or covers 70, 71 are trapezoidal in shape with ramps at each side and a flat top surface. The shape of these covers 70, 71 however may be changed as long as their thickness is kept to a minimum to avoid the module becoming too thick overall.

30 The provision of the cover 70, 71 prevents any twisting of modules when coupled together side wall to side wall. This is because when two modules are coupled together there are two male protrusions and adjacent recesses for each coupled side wall. Accordingly twisting the modules in  
35 either direction means that one set of covers 70, 71 prevents twisting/rotation in one direction and the other set of covers at the other end of the coupled modules

prevents twisting/rotation in the opposite direction.

According to another embodiment of the present invention as shown in Figure 4, the shape of the protrusions 19, 23, and 24 are modified to improve the coupling between  
5 modules side wall to side wall.

To improve this coupling the protrusion 19 is provided with convex side walls 81, 82 which extend into the normal straight walls around the level of the edge of the side wall 12.

10 The protrusions 23 and 24 have slightly convex shaped inner side walls 83, 84. It follows from the above arrangement that a male protrusion fits more securely into a recess between protrusions 23 and 24 of a female section of a module.

15 Male protrusions with the shaped ends as described in relation to Figure 4 allow modules to be connected together at angles ranging from 50° to 180° with respect to each other.

20 In addition to the method described in relation to Figure 4 alternative conventional techniques can be applied to ensure better coupling with modules side wall to side wall.

25 Furthermore the arrangement of holes in the upper and lower faces of the modules could be replaced by blind holes or a series of bosses designed specifically to accept the shape of the protrusions in the side walls of the module.

According to the present invention other shaped modules are also within the scope of the invention, thus a module having the shape of two modules connected together could be  
30 provided as a single element as shown for example in Figure 5. However Figure 5 is intended to show how protrusions and recesses fit together when two modules are coupled together side wall to side wall. It can be seen from Figure 5 that it is not necessary for the protrusions to extend completely  
35 to the end of each of the recesses within which they are located during coupling.

The module according to the fourth embodiment of the

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invention is similar to the third embodiment.

Instead of cover 70 and 71 being located over recesses 20 and 22 respectively, a single cover 90 is provided over each of the recesses formed between or adjacent protrusions extending outwardly from the body of the module 89.

Each cover 90 is generally rectangular with opposing ends 91, 92 being curved rather than straight.

One long side wall 93 of each cover 90 is substantially flush with the adjacent side wall 94 of the module 89.

The cover 92 extends completely across spigot 95 and adjacent recesses 96, 97 on either side thereof. Likewise another cover 90 extends across spigots 98 and 99 of a female portion of module 89.

The curved ends 91 and 92 of each cover 90 are located beyond each of the recesses 97, 96 associated with spigot 95 of a male portion of module 89.

Similarly the curved ends 91, 92 extend beyond each side of spigot 98 and 99 of the female portion of module 89.

Each of the spigots 95, 98 and 99 have convex side walls similar to those described in relation to the third embodiment of the present invention.

It is noted that each of the covers 90 are located on the same side of the module 89 and may be integrally formed or stamped onto the module 89.

Figure 7 shows the underside of the module 89 and how each cover 90 appears as a web covering one side of each recess 96, 97 and 100.

In Figure 8 the connection process of two modules shown in Figure 6 is exemplified.

Module 101 and module 102 are coupled together at an angle whereby spigot 95 of one module is able to interlock with spigots 98 and 99 of the other module.

Because of the presence of each of the covers 90 the two modules 101 and 102 can be quickly coupled together by interlocking the spigots 95, 98, 99 with an acute angle formed between opposing faces of each module 101 and 102 with the covers 90 of both modules being on the sides of the

modules forming the acute angle. With this configuration it is relatively simple to pivot one module with respect to the other. It should be noted that embodiment 4 is most effective for modules coupled together between 45° and 180° inclusive.

In fact the fourth embodiment makes it virtually impossible to connect two modules together and pivot them beyond 180° with respect to each other.

This is because the spigots which are located in the recesses about the adjacent covers 90 and accordingly cannot protrude beyond the recess they are located because the cover 90 prevents this. However pivoting the modules in the opposite direction is possible because the spigots are able to then protrude beyond each recess in which they are located.

A fifth embodiment of the present invention is shown in Figures 9 to 13.

In Figure 9 the module 103 according to the fifth embodiment of the present invention has side edges 104 having an enlarged spigot 105 at one end and two narrower spigots 106 and 107 at the opposite end.

Each enlarged spigot 105 has a head region 108 with enlarged convex side portions 109.

Below each side portion 109 a narrower straight wall 110 is provided.

The side walls 110 extend into a depressed area 111 located on either side of the spigot 105.

Each depressed 111 lies below the level of a straight central section 112 of the side module 103. Likewise the depressed area 111 close to edge 113 of the module 103 lies below the level of the adjacent edge face 114 of module 103.

The two narrower spigots 106 and 107 define a valley therebetween 115.

The bottom of the valley 115 is flat and lies below the level of edge 112.

Each spigot 106 and 107 has an inner side wall 117 consisting of a lower vertical straight section 118 and an

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consisting of a lower vertical straight section 118 and an upper bulbous portion 119 which faces the opposing bulbous portion 119 of the adjacent narrow spigot.

5 Above each bulbous region 119 the inner surface flares outwardly along tapered surface 120.

The outer wall of each narrow spigot 106 and 107 slopes downwardly and outwardly at an angle of approximately 30°.

10 As shown in Figures 10 and 11 two modules 122, 123 are coupled together by placing one module at an angle with respect to the other module, this angle working best at between 45 and 90°.

15 The area below the head 108 of spigot 105 is then pushed into the flared opening between spigots 106 and 107 and due to the slight resilience of spigots 106, 107 the walls 110 of spigot 105 are able to fit between the bulbous regions 119.

20 Once the spigot 105 passes beyond the bulbous regions 119 to the interior of the valley 115 the spigots 106 and 107 move back towards each other due to their slight resilience. The protrusion 105 is then captured within the valley 115 because the distance between the bulbous regions 119 is smaller than the width of the spigot 105 between straight walls 110.

25 Because the head region 108 includes enlarged regions 109 the head 108 is unable to pass between the spigots 106 and 107 and is therefore captured therebetween.

30 It is preferred that there is a slight gap between opposing walls 110 and 118 so as to permit sliding movement therebetween if one module is pivoted with respect to the other.

The above described coupling provides an effective hinge or pivot connection between two coupled modules.

35 When one module pivots with respect to the other there is a natural tendency for spigot 105 to be withdrawn from between spigots 106 and 107.

Accordingly it is desirable that there is sufficient space between opposing interacting faces of spigot 105 and

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downwardly and outwardly as the module with which it is associated pivots outwardly with respect to the module with which it is coupled.

5 The pivoting action of coupled modules is assisted by having the level of the valley and depressed areas below the level of the central side wall 112.

Likewise the outer side 124 adjacent outer wall 121 of spigot 107 lies above the level of both the valley bottom surface and depressed areas 111.

10 It is also preferred that the level of 124 is the same as that of the central side wall 112.

With the above arrangement when one module is pivoted with respect to another module opposing edge faces 112 and 124 are able to stay in close effectively abutting  
15 relationship.

If the level of 124 and 112 was lower then a gap would appear when the modules were pivoted apart.

Likewise because coupled spigots are able to slide once engaged spigots 106 and 107 are able to have their inner  
20 surfaces slide along the outer surfaces of spigot 105 as couple spigots pivot towards or apart from each other.

As shown in Figure 12 using the coupling technique described in relation to the fourth embodiment, four modules 130, 131 and 132, 134 are able to be easily connected  
25 together.

Likewise numerous geometrical objects can be formed such as a polygon 133 as shown in Figure 13.



CLAIMS

1. A module for building a structure, having a generally planar body including an upper and lower face with a plurality of sides, each side having side coupling means  
5 for coupling to a side coupling means of another module side and the upper and lower faces having face coupling means which is able to be coupled with a side coupling means of a like module.

2. A module as claimed in claim 1 wherein the female  
10 portion includes protuberances on either side of the recess, which protuberances are resiliently deformable to allow the neck region to pass through the narrow opening.

3. The module as claimed in claim 2 wherein each protuberance has an inner surface with an enlarged portion  
15 at its outer end with the narrow opening being located between the enlarged portions.

4. The module as claimed in claim 1 or 3 wherein each protrusion has a head region and the neck region is located  
on opposite sides therebelow.

20 5. The module as claimed in claim 4 wherein each protrusion has a depression on each side thereof, which depression lies below the level of a central region of the side of the module.

6. The module as claimed in claim 5 wherein the  
25 recess has a bottom surface which is below the level of the central region.

7. The module as claimed in claim 6 wherein one module cannot be connected to another module end to end.

8. The module as claimed in claim 6 wherein the  
30 coupling means is adapted to permit the module to pivot with respect to another module with which it is coupled.

9. The module as claimed in claim 8 wherein the module when coupled with another module is able to pivot between 45° and 175° with respect to another module with  
35 which it is coupled.

10. The module as claimed in claim 9 wherein each side has a single male portion and a single female portion.

11. The module as claimed in claim 10 wherein the female and male portions are symmetrically arranged on the side of the module.

12. The module as claimed in claim 11 wherein the male and female portions are spaced on either side of the central region.

13. The module as claimed in claim 12 wherein the inner walls of protuberances of the female portion are able to slide across opposing outer surfaces of the neck region of the male portion.

14. The module as claimed in claim 13 wherein the neck region comprises straight side walls of the male portion, which side walls extend below the head portion.

15. The module as claimed in claim 14 wherein the recess of the female portion widens from the opening to a base surface thereof.

16. The module as claimed in claim 15 wherein the width of the head region at its widest point is larger than the width of the recess at its widest point.

17. The module as claimed in claim 16 wherein the thickness of the module is less than the length of the recess below the opening.

18. The module as claimed in claim 17 wherein the width of the neck region is less than the width of the recess below the opening.

19. The module as claimed in claim 19 wherein the width of the protrusion reduces from the head region to the bottom of the depression.

20. The module as claimed in claim 19 wherein the female portion comprises finger like protrusions which are adapted to loosely hold the male portion below the head region, whereby pivotal motion between two coupled modules is permissible.

21. The module substantially as hereinbefore described with reference to the accompanying drawings.

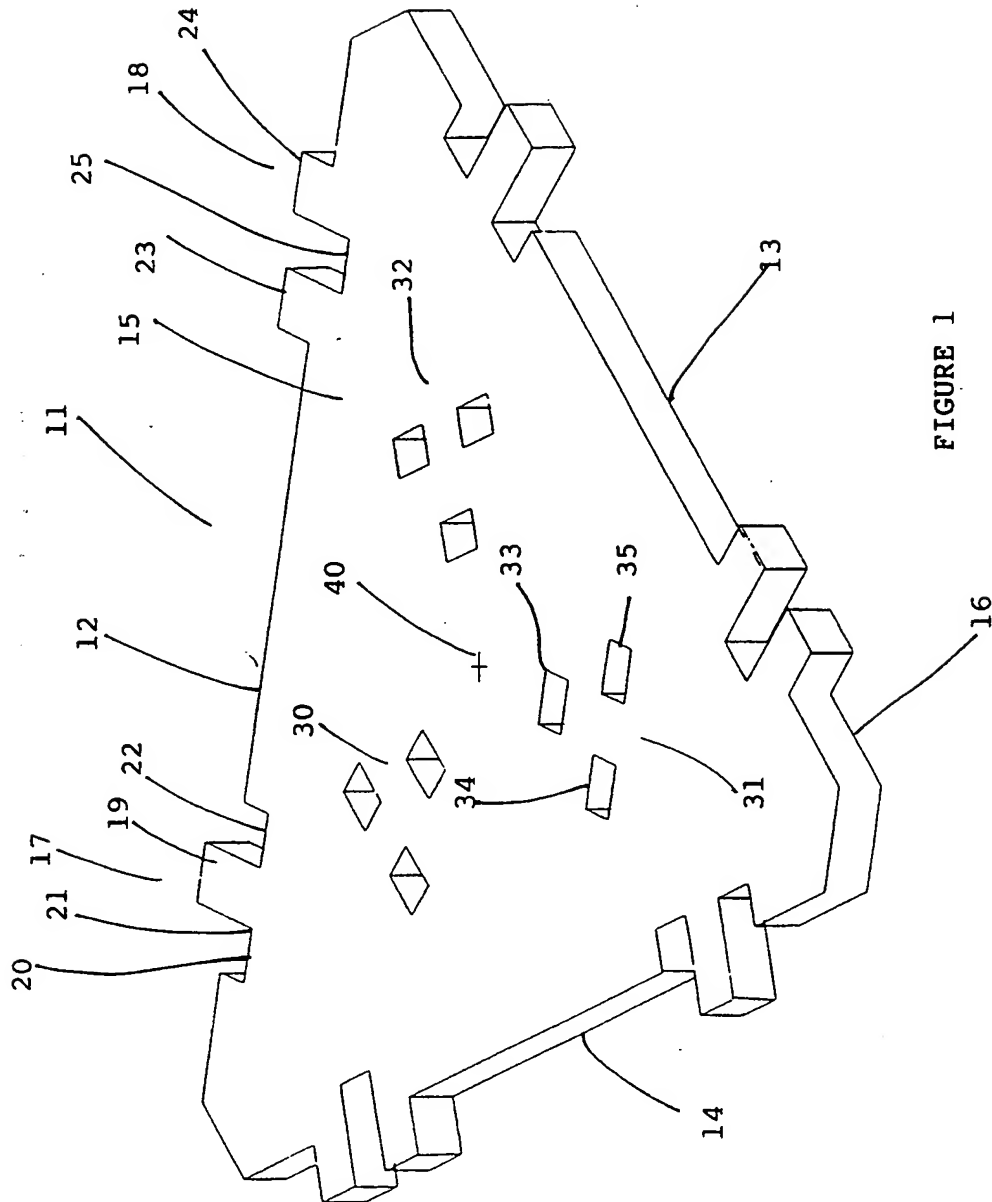


FIGURE 1

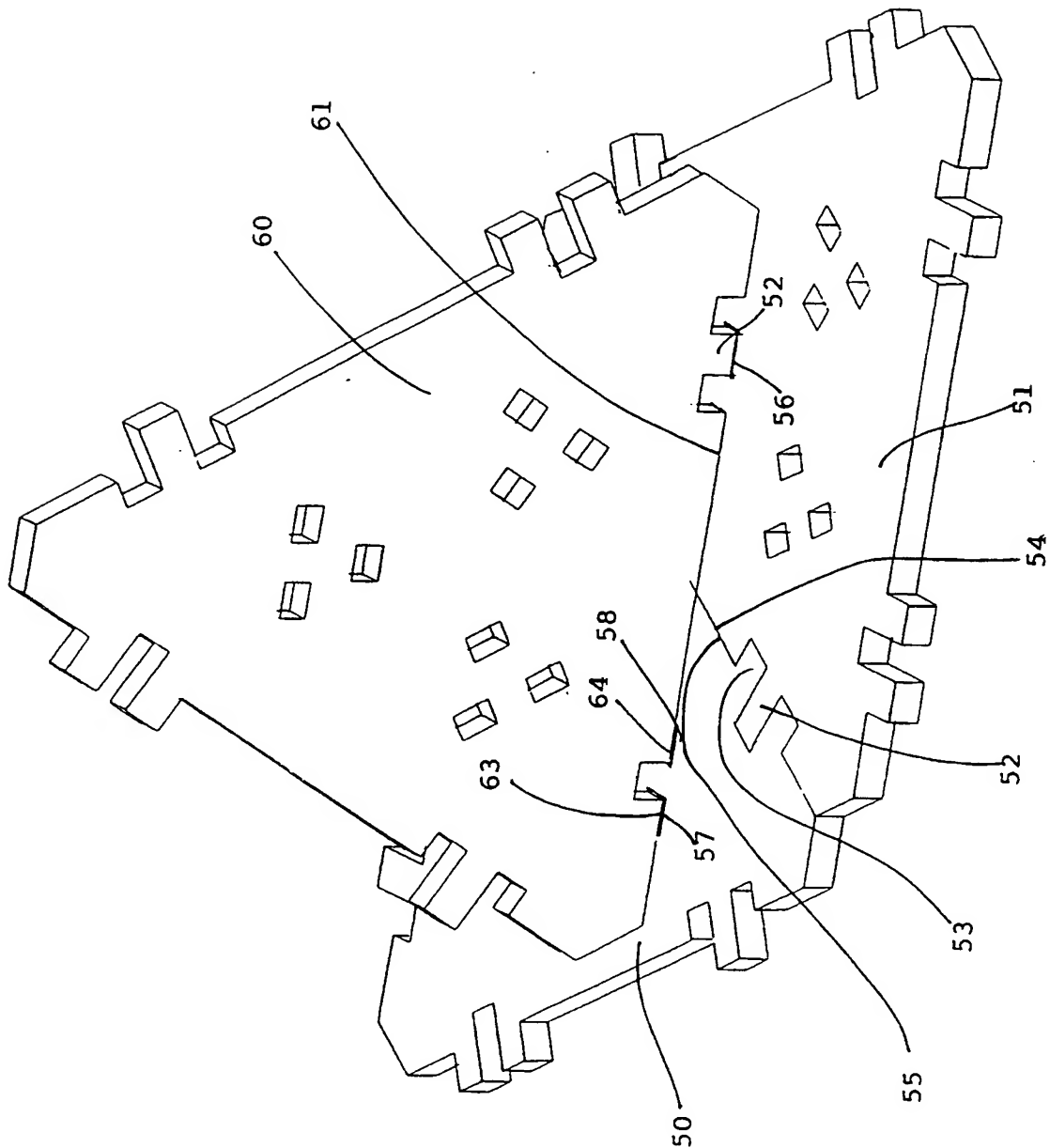


FIGURE 2

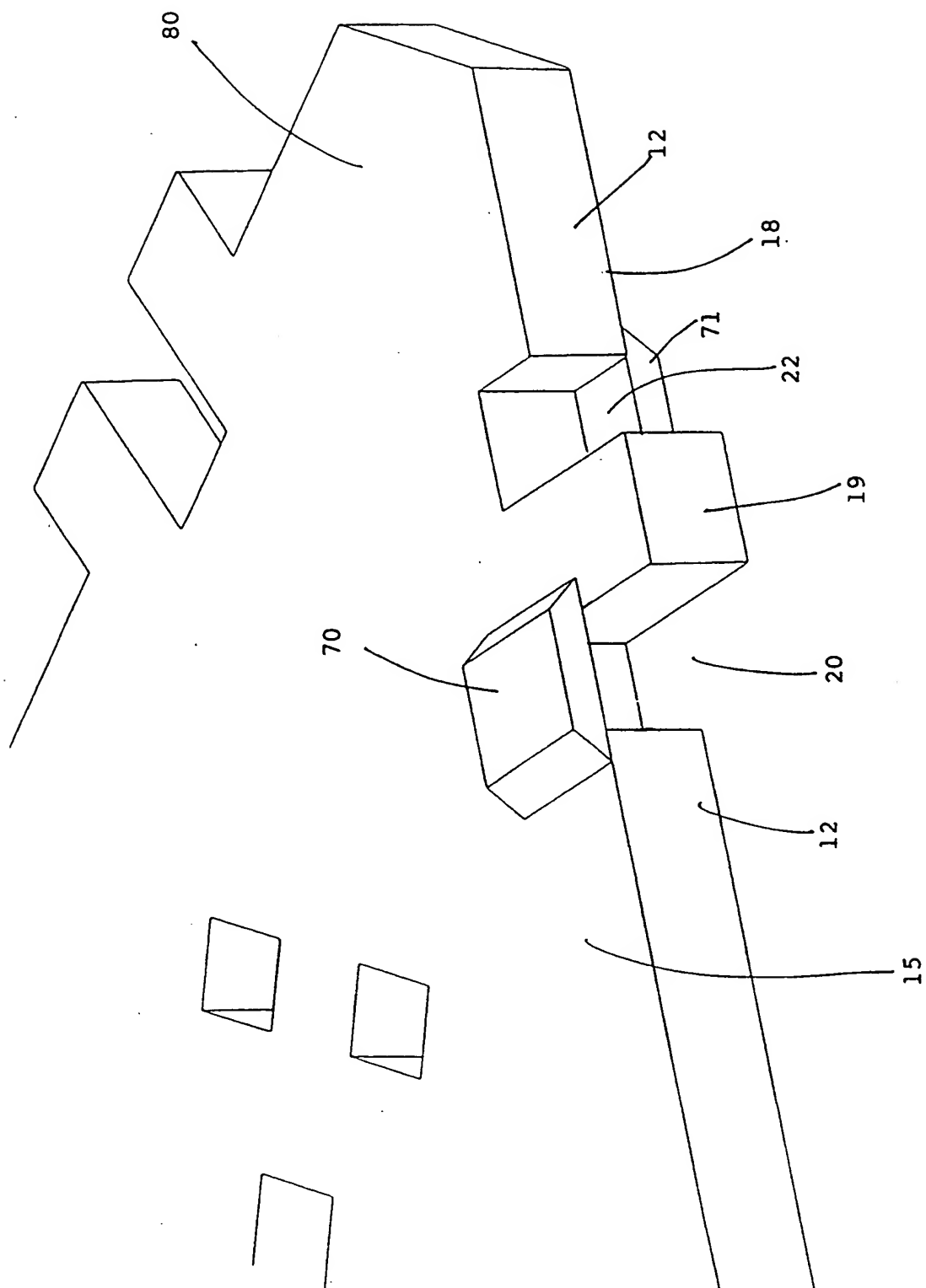


FIGURE 3

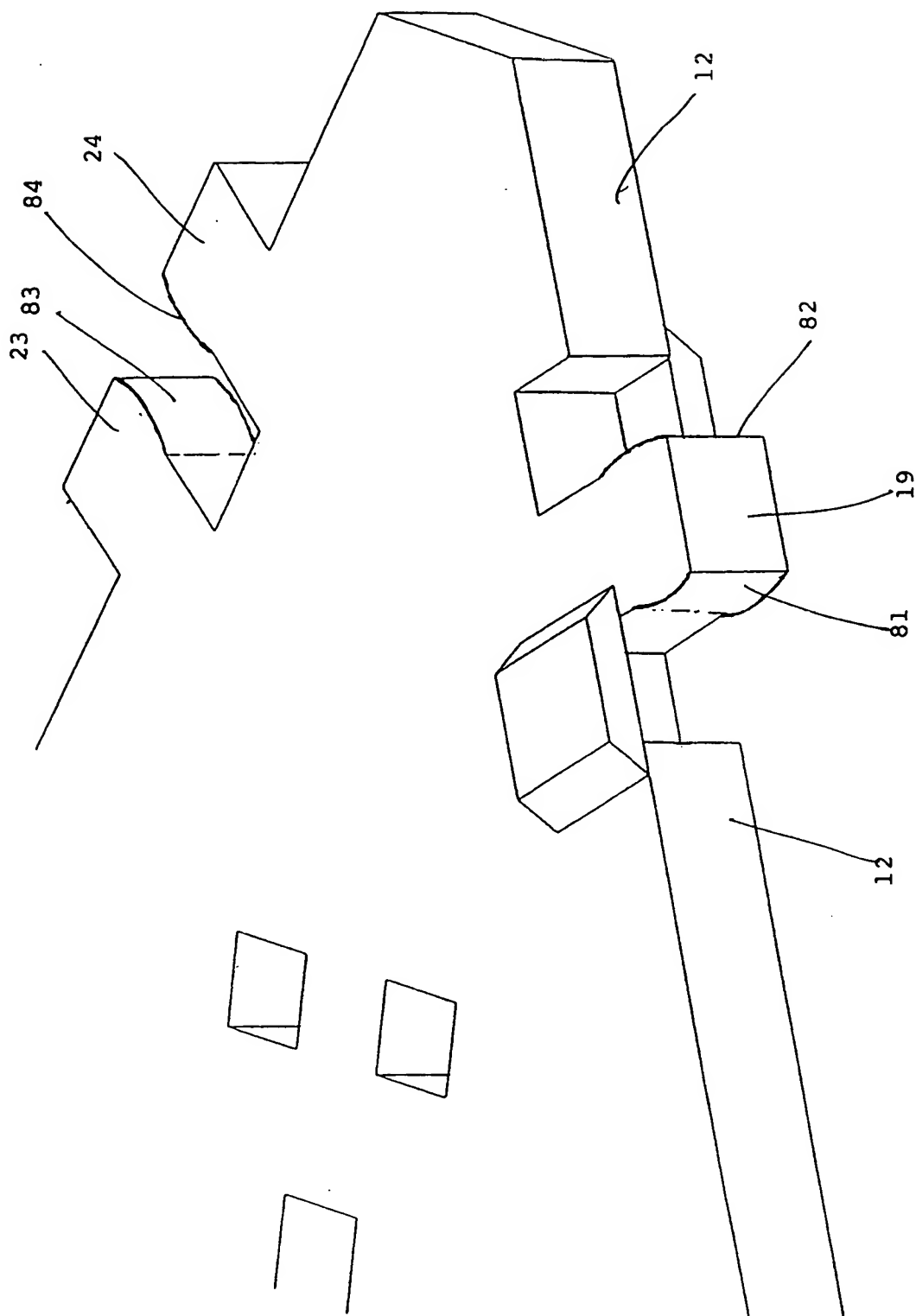
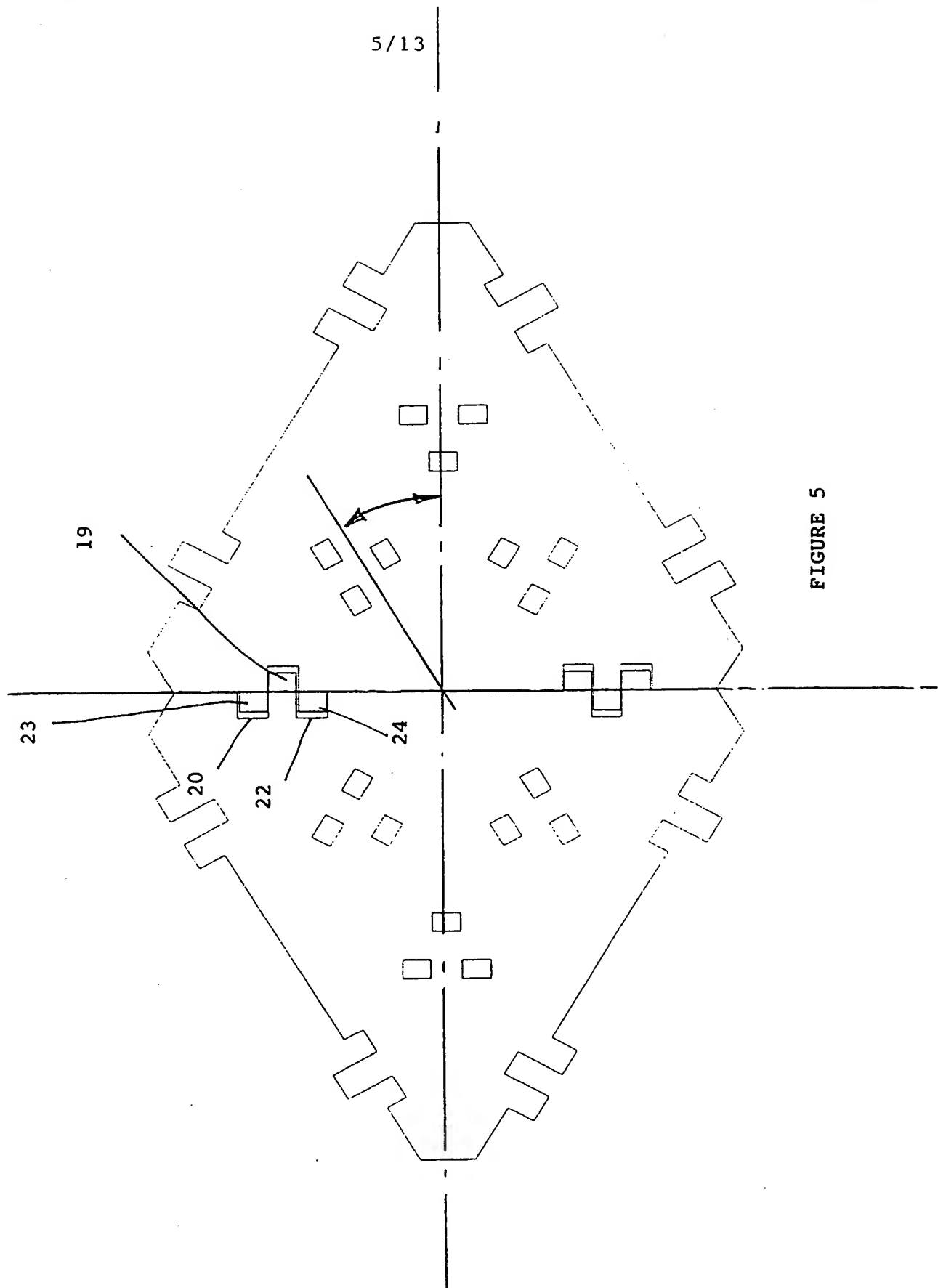


FIGURE 4



***SUBSTITUTE SHEET (RULE 26) (RO/AU)***

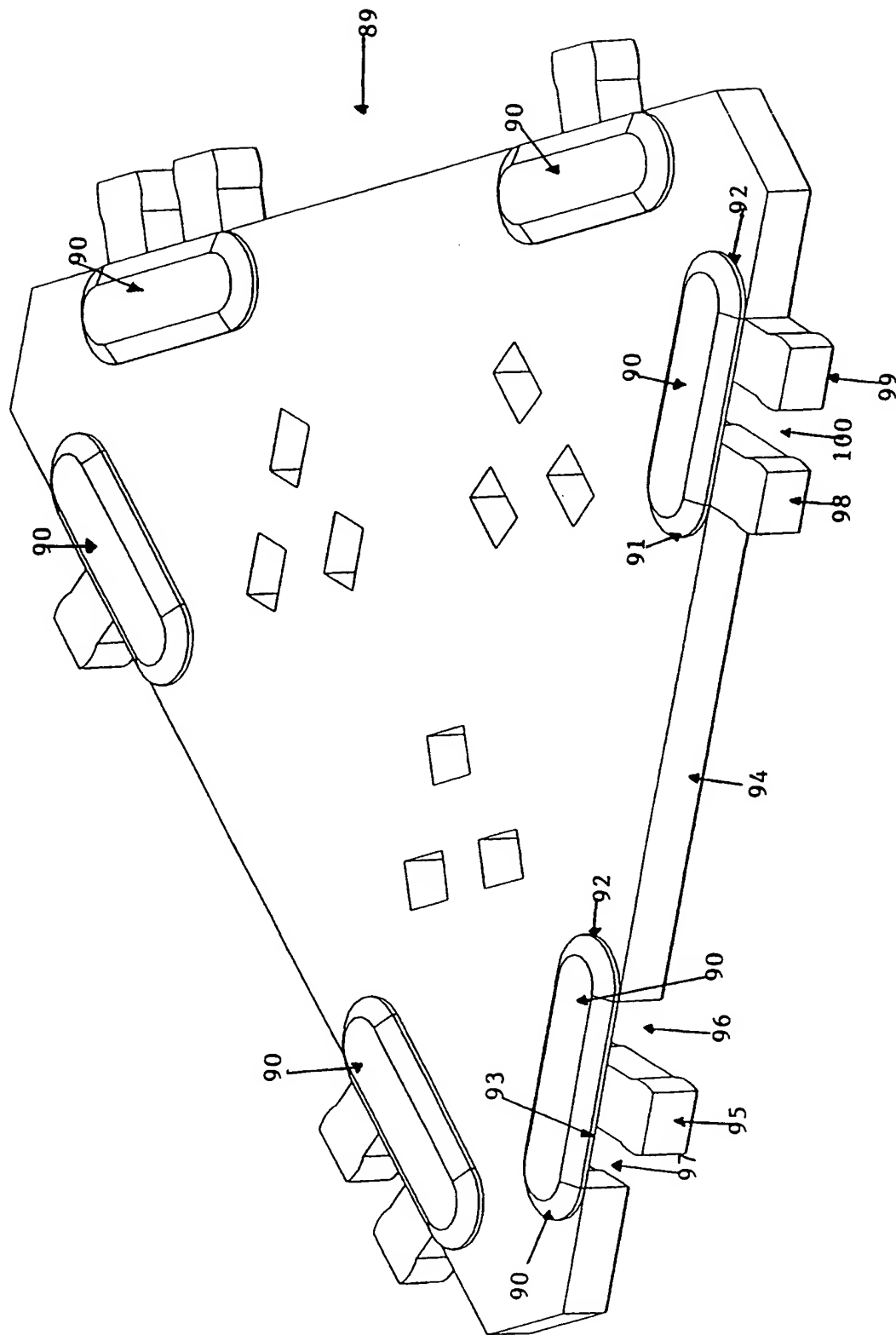


FIGURE 6



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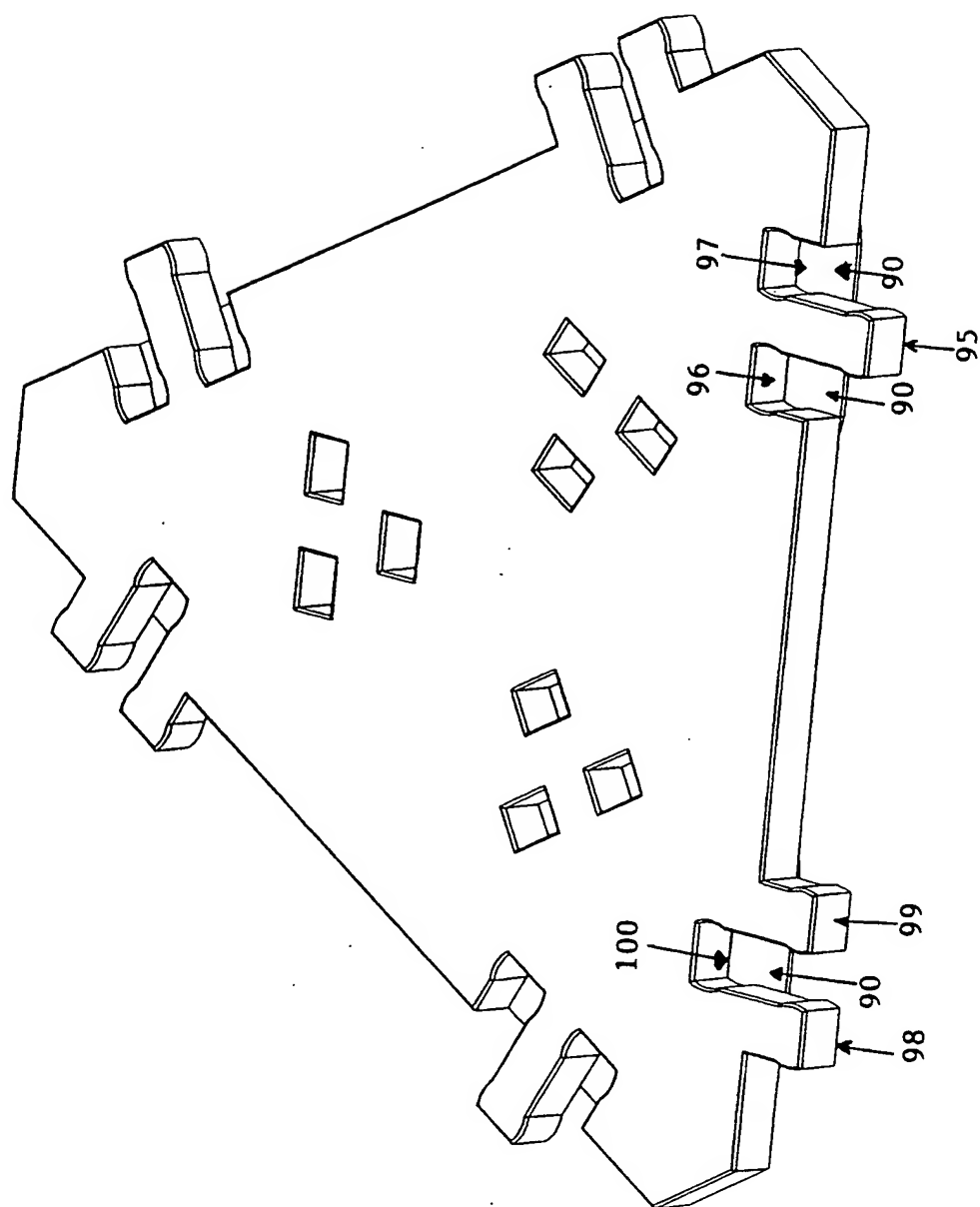


FIGURE 7

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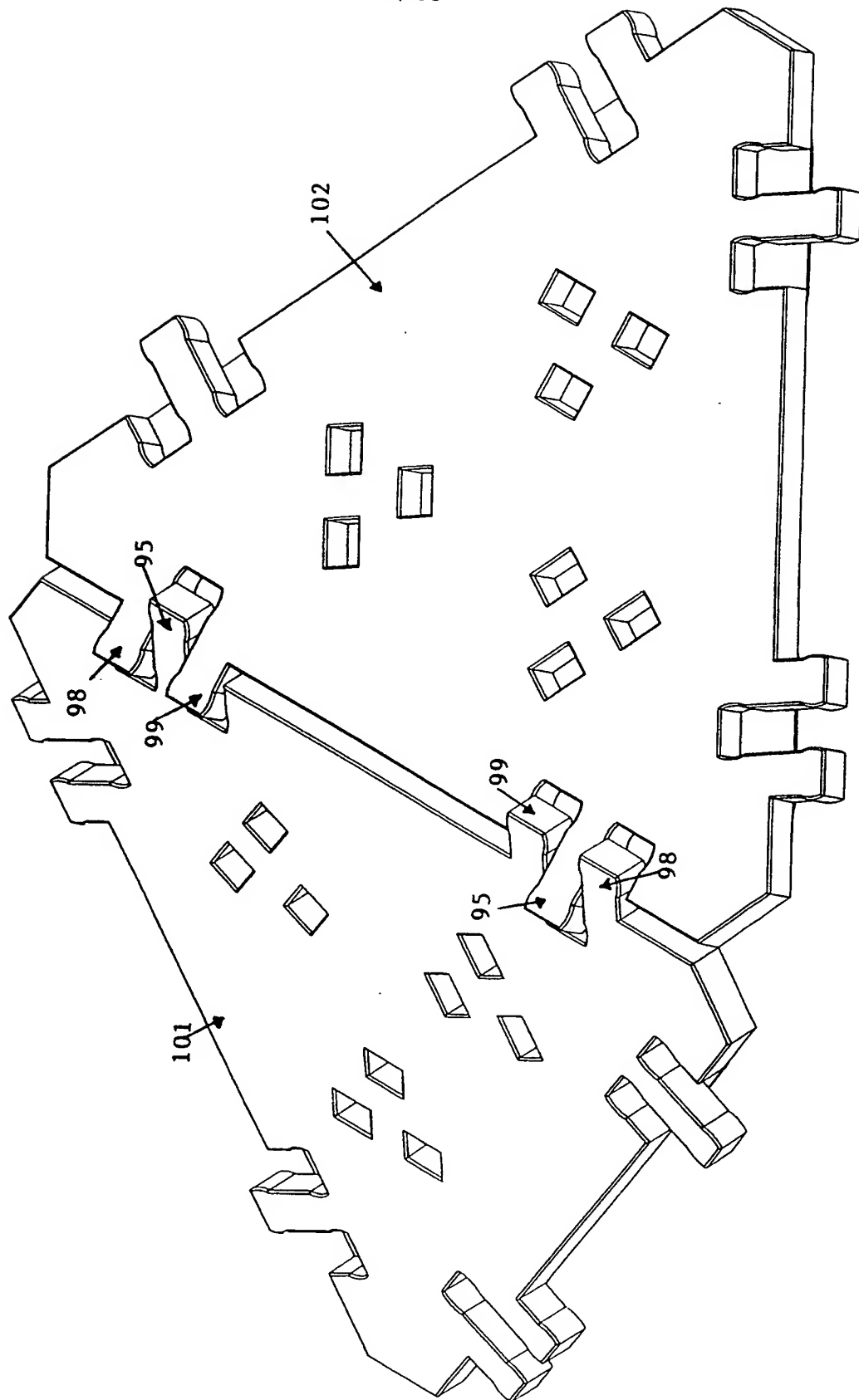


FIGURE 8

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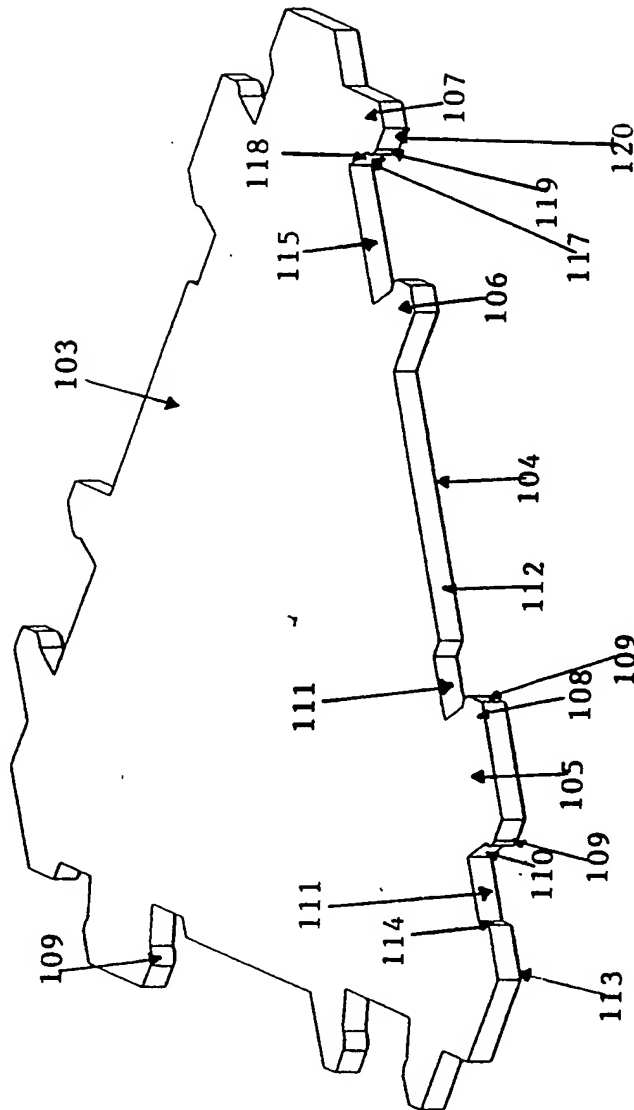


FIGURE 9

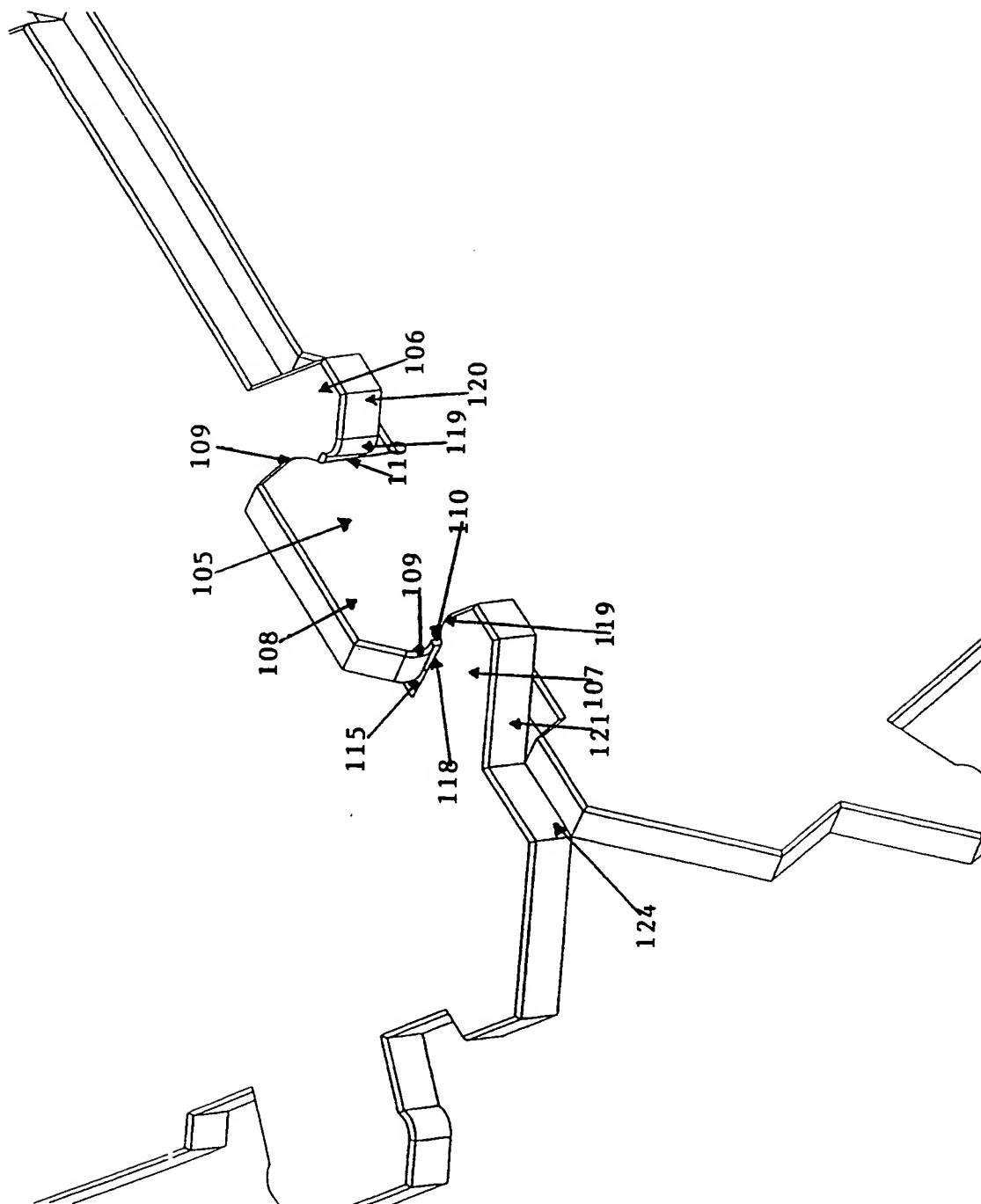


FIGURE 10

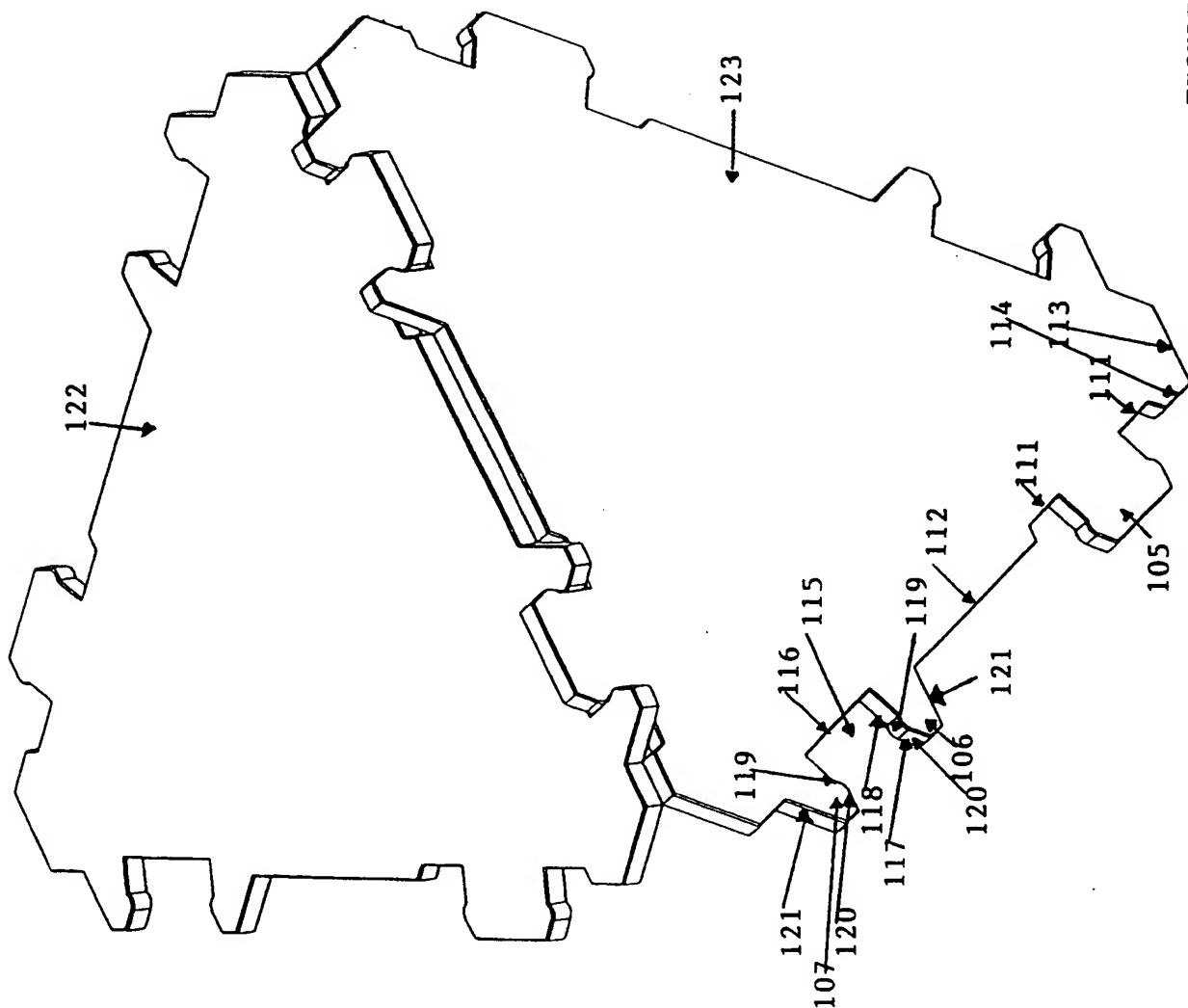
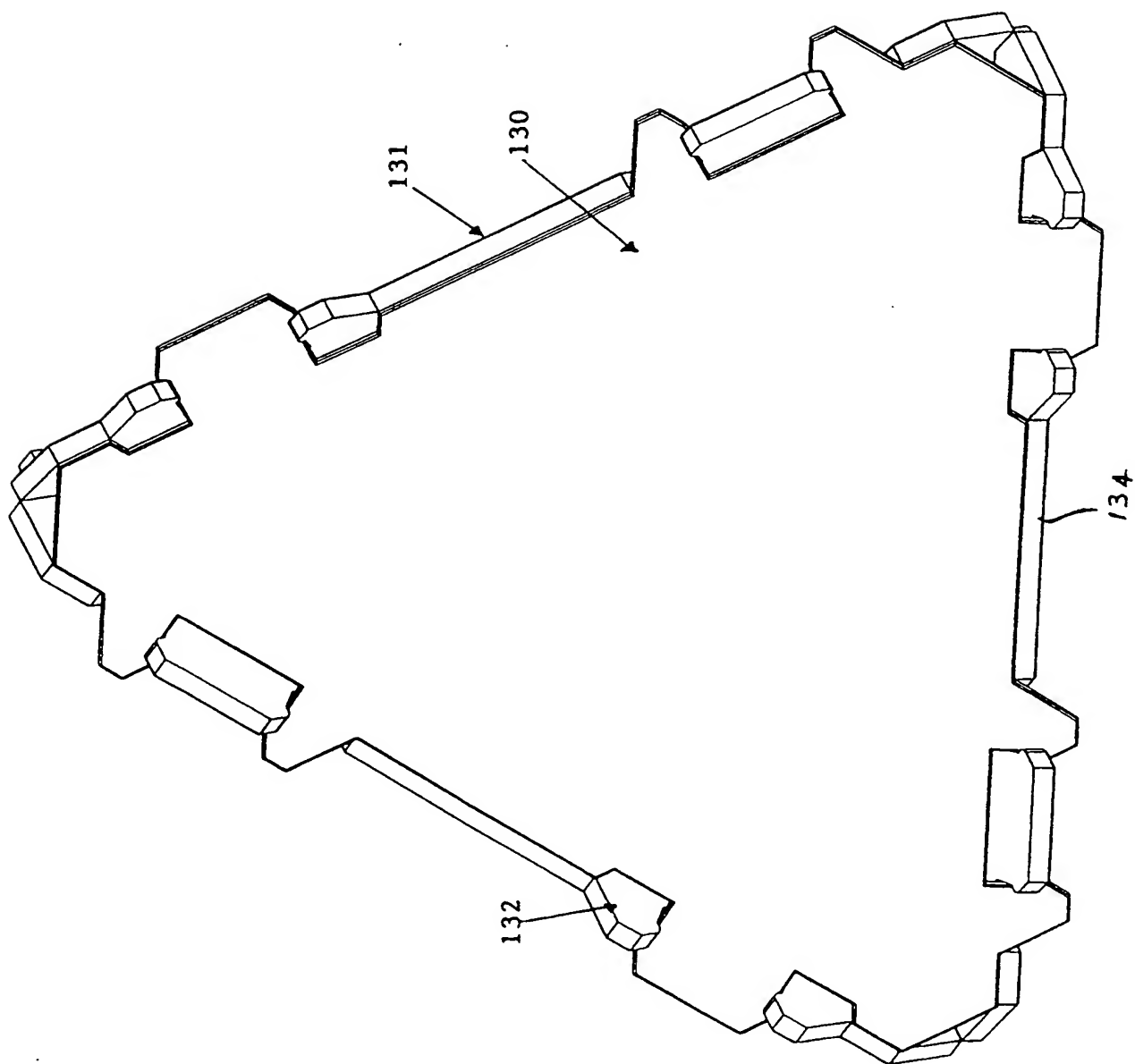


FIGURE 11

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FIGURE 12



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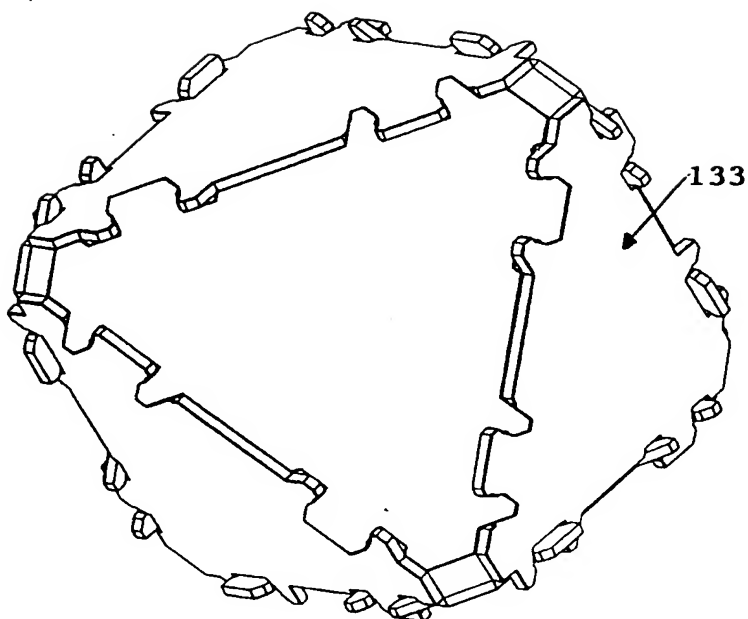


FIGURE 13

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU00/00242

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. <sup>7</sup>: A63H 33/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC: A63H 33/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
AU: IPC AS ABOVE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
WPAT

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Derwent Abstract Accession No F7579A/29, Class P36, ZA 7701596 (Ashcap Exports Pty) 8 May 1978	1 to 7
X	US 5545070 (Liu) 13 August 1996	1 to 6
X	WO 9415688 (Q.P.I. Consumer Products Corporation) 21 July 1994	1 to 6

☒ Further documents are listed in the continuation of Box C ☐ See patent family annex

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>		<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>
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Date of the actual completion of the international search  
19 April 2000

Date of mailing of the international search report  
8TH MAY 2000

Name and mailing address of the ISA/AU

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/00242

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5163862 (Philips et al.) 17 November 1992	1 to 6
X	GB 2252056 (Chen) 29 July 1992	1 to 6
X	AU 20044/88 (Gray) 27 January 1989	1 to 6
X	AU 58751/86 (Quadraflex Plastics Ltd.) 17 December 1987	1 to 6
X	EP 121433 (Ziegler) 10 October 1984	1 to 6
X	DE 2716090 (Otto) 26 October 1978	1 to 6
X	AU 44628/68 (Heubl) 16 April 1970	1 to 6
X	AU 24887/35 (Sieck) 30 July 1936	1 to 6

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